



ptimising **P**ower @ ork

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Office of Public Works

- Property Management (Central Government Portfolio) is one of the main activities of the Office of Public Works (OPW)
- Approximately 2000 properties, many small, Total Floor Space of 1M m² (for 50,000 Staff)
- Predominantly office accommodation but also includes data centres, laboratories, heritage buildings, etc.
- Total Energy Spend = €35M - €40M





Our Clients

- OPW provides a central service in terms of technical expertise and management of buildings
- Work closely with all our customers on a day to day basis.
- OPW owns/leases the properties on behalf of the State
- Individual occupying Departments pay for Energy





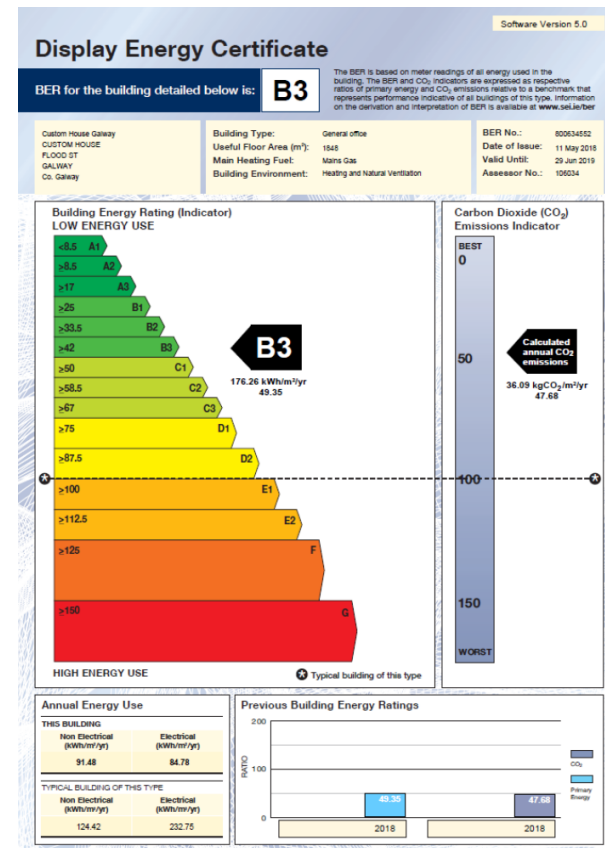
EED Article 5 – Exemplary Role of public bodies' buildings

- Ireland adopted the “*Alternative Approach*” as per the EED
- Building Inventory: Approximately 80 buildings (375,000m²)
 - Owned and Occupied (not leased)
 - Administrative Departments
 - Only buildings not meeting Article 4 Directive 2010/31/EU
 - Protected Structures/Historic Buildings Excluded
- Vast majority (95%) of these buildings are Naturally Ventilated office blocks
- Average Building Size = 4700m²



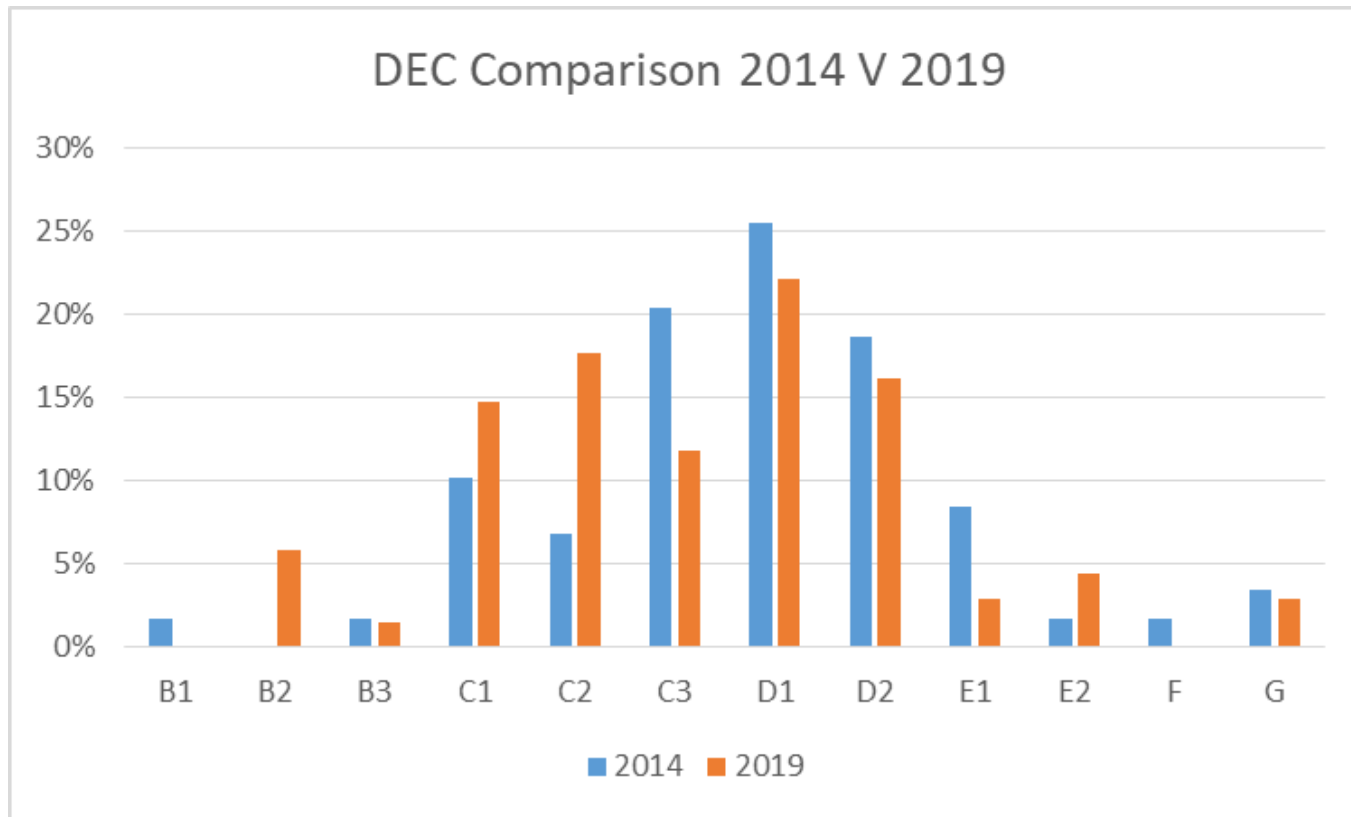
Benchmark Performance (2014) of EED Article 5 Buildings?

DEC Rating	Buildings
A	0%
B	3%
C	37%
D	44%
E	10%
F	2%
G	3%





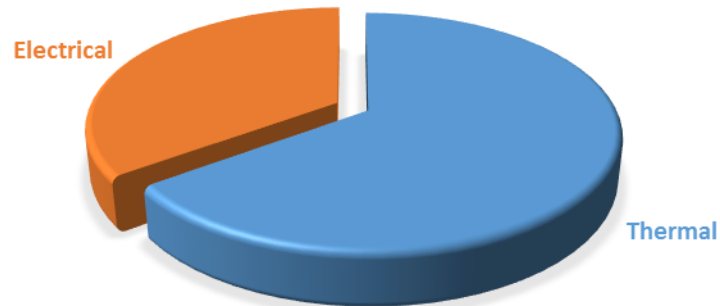
Improvement in Performance



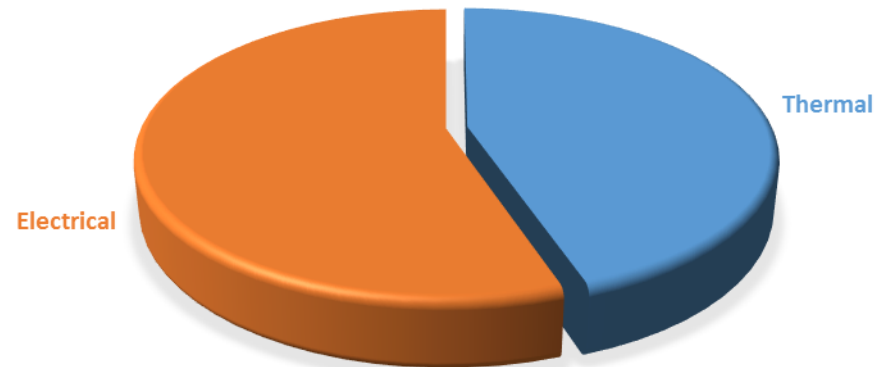


Energy and Emissions – Typical Naturally Ventilated Office

TYPICAL ENERGY CONSUMPTION
(NV OFFICE)

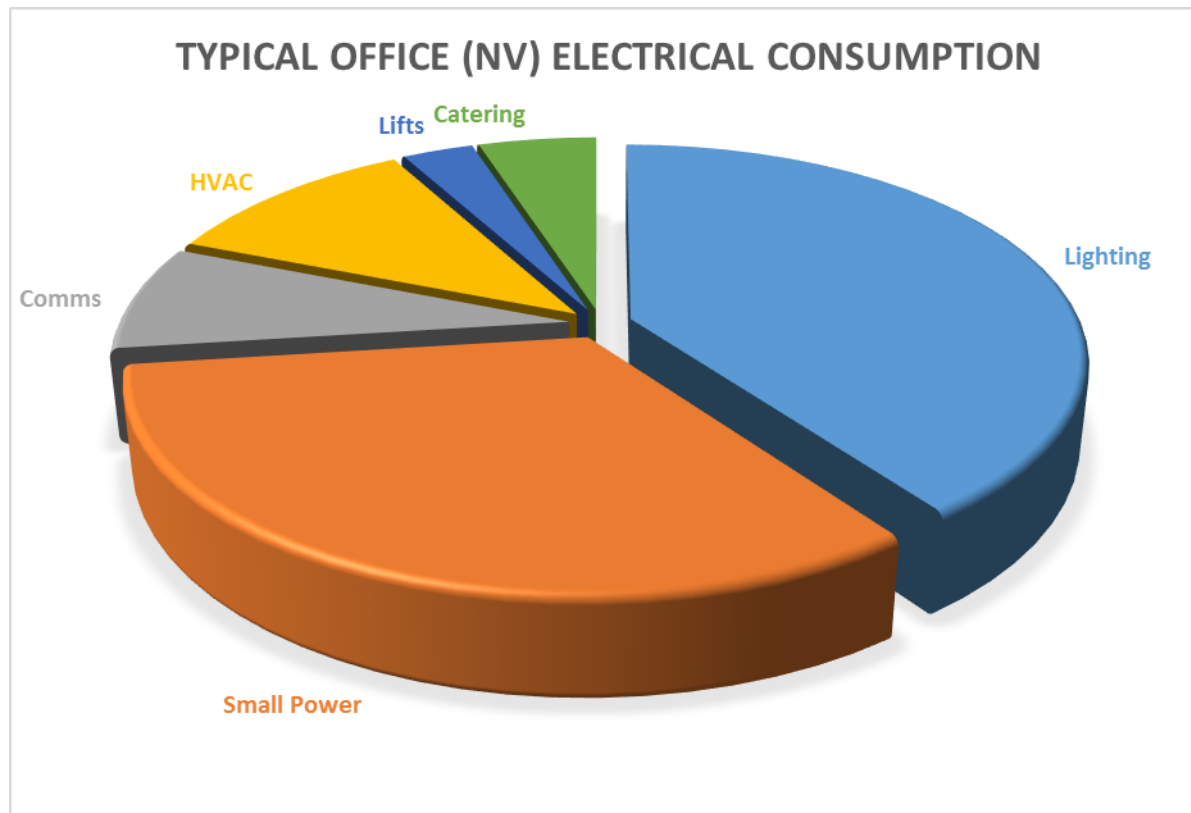


TYPICAL CO2 EMISSIONS
(NV OFFICE)





Electrical Consumption Typical Office (NV)





Energy Strategy to 2020 and beyond:

1. *EED 'Alternative Approach': Large scale Behavioural Change Campaign (Optimising Power @ Work)*
 - Installing metering and energy data logging in all buildings
 - Establishing Energy Teams
 - Energy Audits
2. Retrofitting older lighting systems, heating systems and controls
3. Deep Retrofit - Fabric Upgrades & Air Tightness



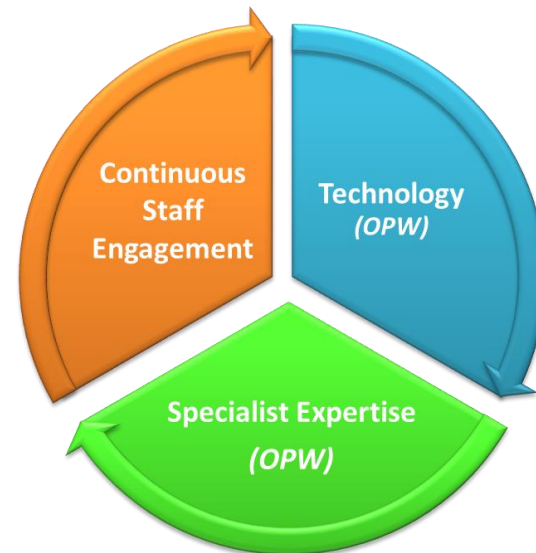
1) Optimising Power @ Work

- Installed dedicated Energy Monitoring Systems in all Buildings (275 No.)
- Ran pilot study in 10 buildings to see the scope for energy savings by behavioural change and low cost capital investment
- After success of pilot studies launched large-scale programme.



Programme Structure: Three fundamental elements -

1. Technology
2. Specialist Expertise
3. Continuous Staff Engagement





1. Technology :

Availability of up to date reliable energy data

- Install dedicated Energy Monitoring System
- Data collected (15 min) from multiple metering points
- Data transmitted to Central Energy Data Repository (CEDaR) Database
- Various Data Analysis/Analytics Packages available for Reporting and Analysis
- Over 300 buildings now in system



2. Specialist Expertise:

The application of adequate and suitable resources

- Potential net savings are up to three times the investment, per annum
- Worthwhile and necessary to apply proper and adequate resources
- A proper resource is an experienced specialist
- By applying suitable resources it is reasonable to set targets and expect results



3. Continuous Staff Engagement

Programme for each building:

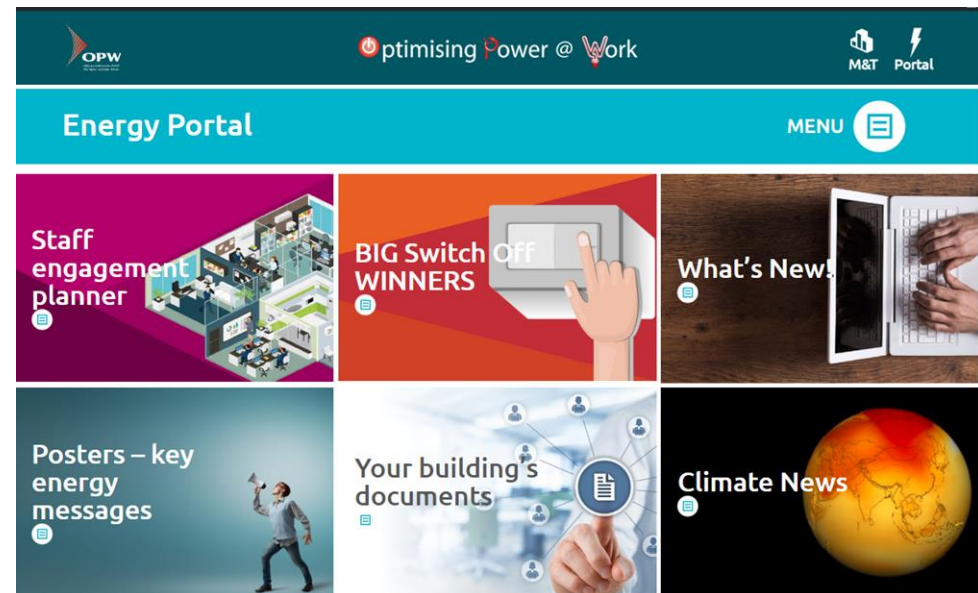
- Step 1: Getting started
- Step 2: Setting up your Energy Team
- Step 3: Training your Energy Team
- Step 4: Developing an action plan
- Step 5: Monitoring progress
- Step 6: Key energy messages communication campaign
- Step 7: Hosting staff energy awareness events
- Step 8: Letting everyone know how well you are doing





Typical Services Provided to each Participant

- Chairing Energy Team Meetings
- Providing Monthly Energy Reports
- Access to Energy Portal
- Out of Hours Audits
- BMS Audits
- Full Building Energy Audit





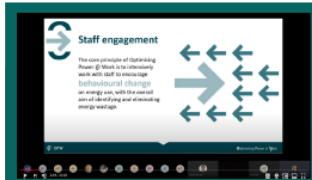
Campaign During COVID-19: Webinar Series



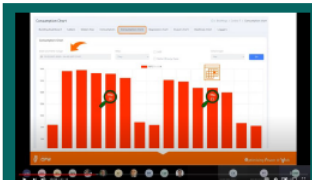
Episode 1: Setting the scene
- Optimising Power @ Work in the context of a Global Carbon Budget, Covid-19 and our progress on targets.



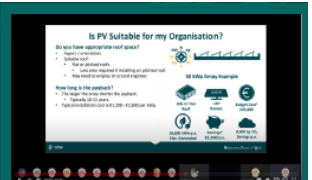
Episode 2: Know your Energy Portal - accessing the resources you will need to run an effective staff engagement campaign.



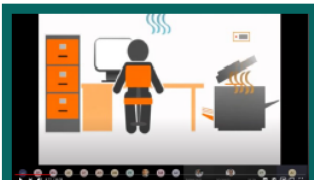
Episode 3: Successful staff engagement campaigns - developing fun and interactive ways to engage with colleagues and deliver energy savings.



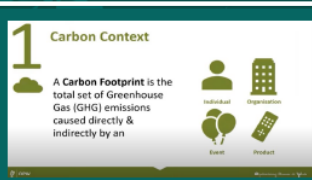
Episode 4: Monitoring to save energy @ home & work - using energy data from M&T, meters or bills to maximise your energy and carbon savings.



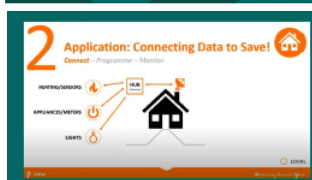
Episode 5: Enlightening solar photovoltaic (PV) - discover more about this technology and find out if it is for you.



Episode 6: How to control and save energy @ home & work - top pointers on making the most of your heating controls and schedules.



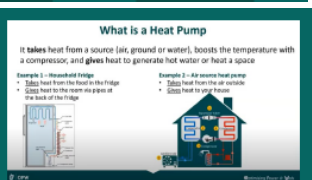
Episode 1: Carbon Clinic - how big is your carbon footprint and what actions can you take to reduce it at home, work and on the road in-between?



Episode 2: Smart Homes and Workplaces - a look at the tools we can utilise to make our lives easier while saving energy, money and carbon emissions



Episode 3: The New Drive: Electric Cars and Infrastructure - the EV era is dawning so get informed and plan for its impact on your workplace



Episode 4: Demystifying Heat Pumps - learn how this technology provides heating while helping to keep the planet cooler



Episode 5: Energy Saving in Historical Buildings - a look inside some of the landmark buildings in the campaign and tips on how to reduce energy



Episode 1: Awareness events - Setting up and running a Step up Day and Out of Hours check for maximise benefit.



Episode 3: Powering the Future - Wind An overview of Ireland's renewable backbone - current contribution and what's in store.



Episode 4: Wind Power - Is it suitable for your site?



Series 4 Live Panel Discussion
A selection of our speakers come together for insights into the four overarching themes that developed over the webinar series throughout 2020.



Public Sector Programme

- Same fundamental principles as Central Gov Programme but specifically tailored for different organisations
- Open to all Public Sector Organisations meeting minimum energy usage criteria
- Campaign is now underway in:
 - 22 Large Acute Care Hospitals
 - 9 Third Level Campuses
 - 15 Local Authority HQ Buildings
 - 9 Prisons
 - Various HSE Estates buildings



Summary of Results (2019)

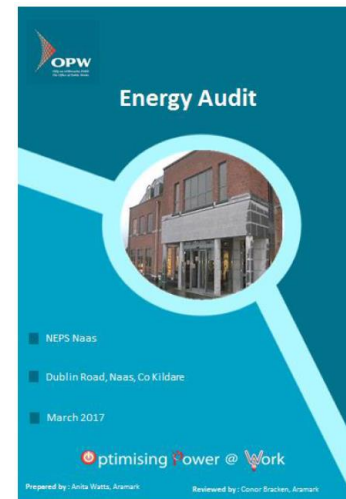
Particulars	Saving
Average Annual Energy Savings	21%
Annual Cost Savings	>€7.1M/annum
Total Annual Energy Savings (Delivered)	65.6 GWh



2) Energy Audits & Energy Retrofit Projects

Top Findings:

- Lighting and Controls Systems
- Heating Systems
- Building Management Systems



Contents

- 1. Introduction
- 2. Executive Summary
- 3. Methodology
- 4. Energy Consumption
- 5. Cost of Energy Breakdown
- 6. Breakdown of Electricity Costs
- 7. Recommendations
- 8. Appendix
- 9. Glossary
- 10. Index

Summary of annual energy consumption

	Energy Consumption		Cost		Average unit cost		CO ₂ emissions	
	kWh/year	%	€	%	€/kWh	kg CO ₂ /year	%	
Electricity	162,330	97%	45,800	97%	€0.28	15,176	98%	
Heating Gas	34,180	21%	43,530	20%	€1.27	15,516	92%	
Total Energy	196,510	100%	€89,330	100%	N/A	30,692	100%	

Energy Breakdown

The chart above shows the percentage breakdown of energy use on site.

Cost of Energy Breakdown

The chart above shows the percentage breakdown of the cost of the energy used on site.

Breakdown of Electricity Costs

The chart above shows the breakdown of electricity costs during the day and after hours.



Selection Criteria for upgrade:

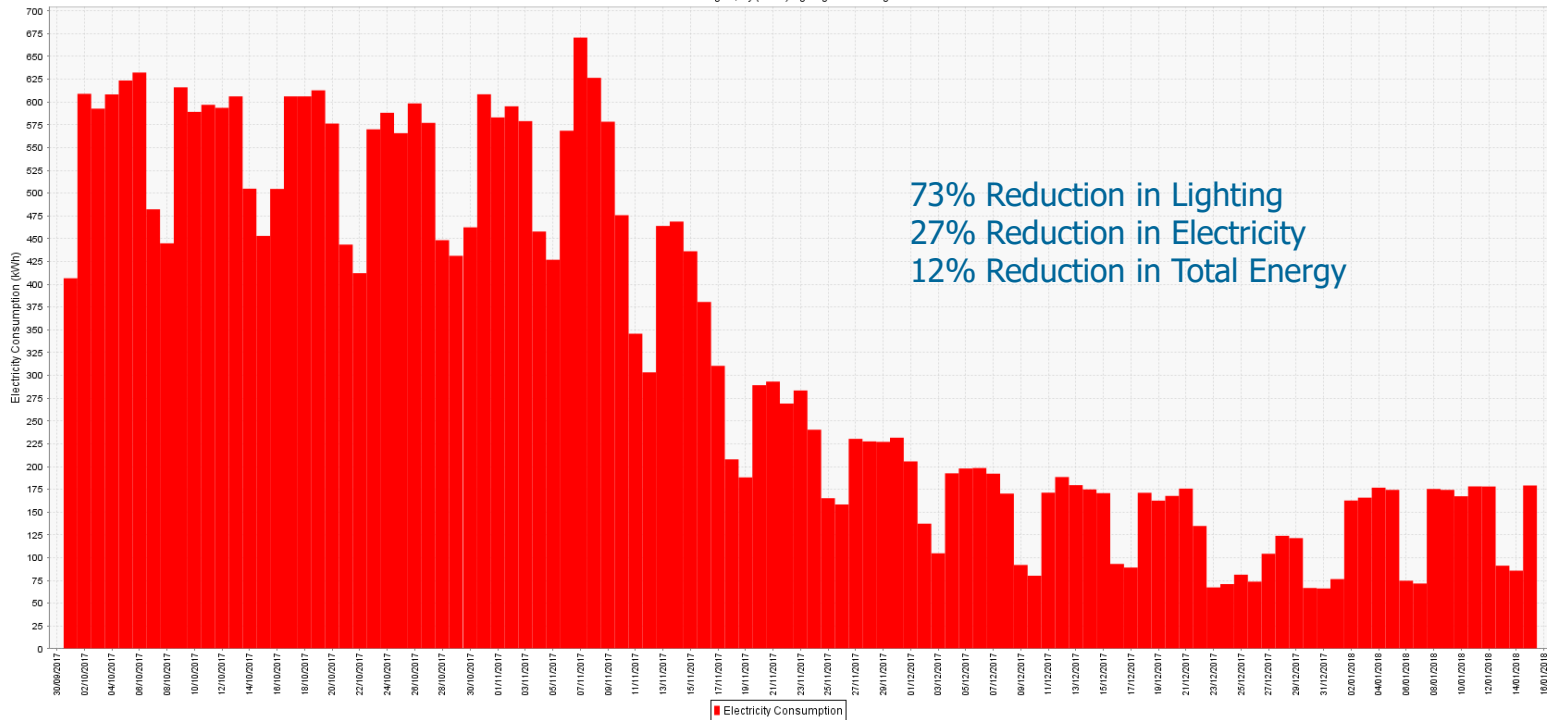
- Actively involved in OP@W
- Have achieved >15% Savings
- Suitable for Lighting Upgrade
- Energy data available
- Prepared to accommodate works on site





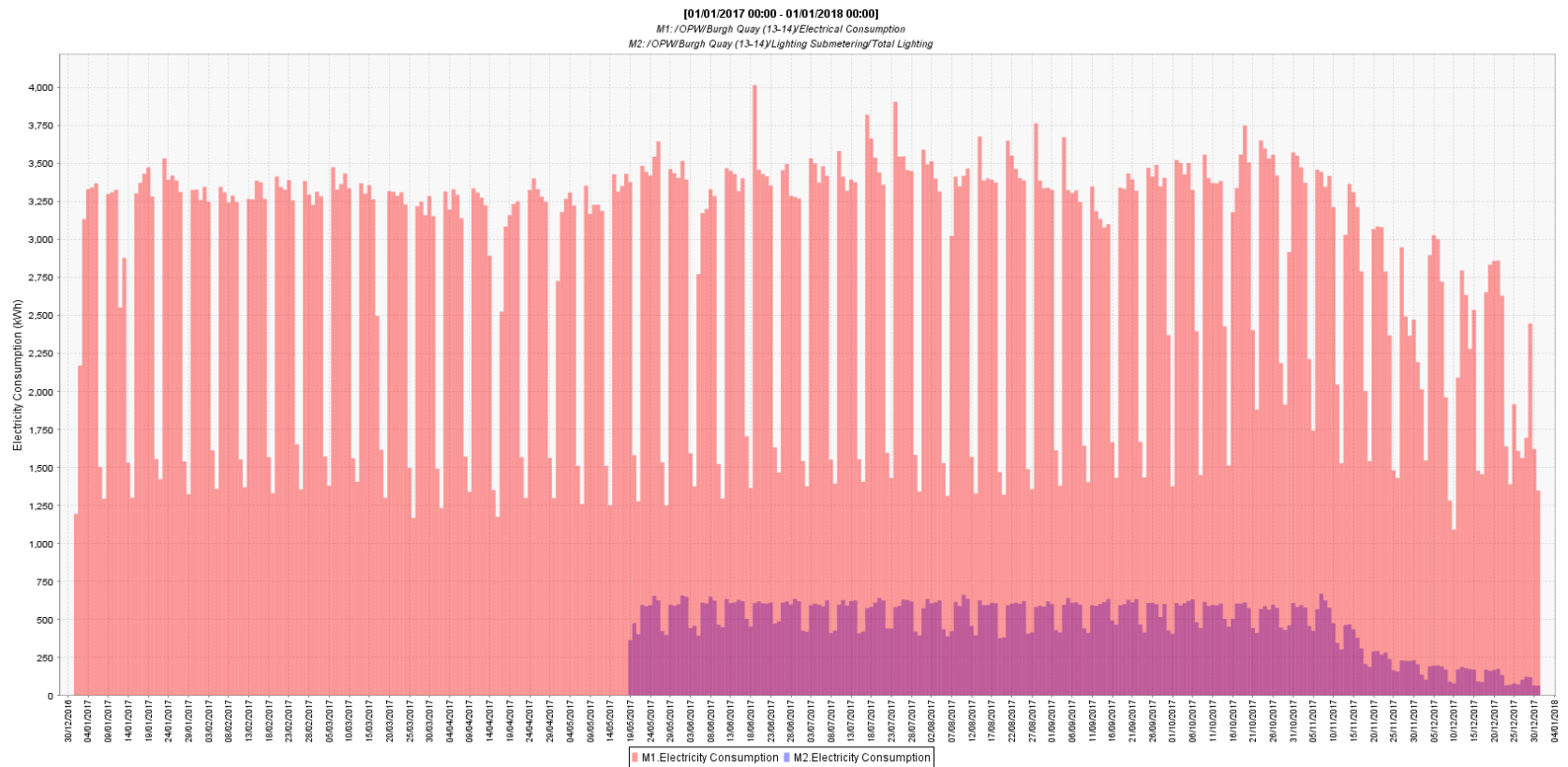
Building No. 1 – Lighting Load:

Total Lighting: Daily: Graph
[01/10/2017 00:00 - 16/01/2018 00:00]
/OPW/Burgh Quay (13-14) Lighting Submetering





Building No. 1 – Total Annual Electrical Consumption



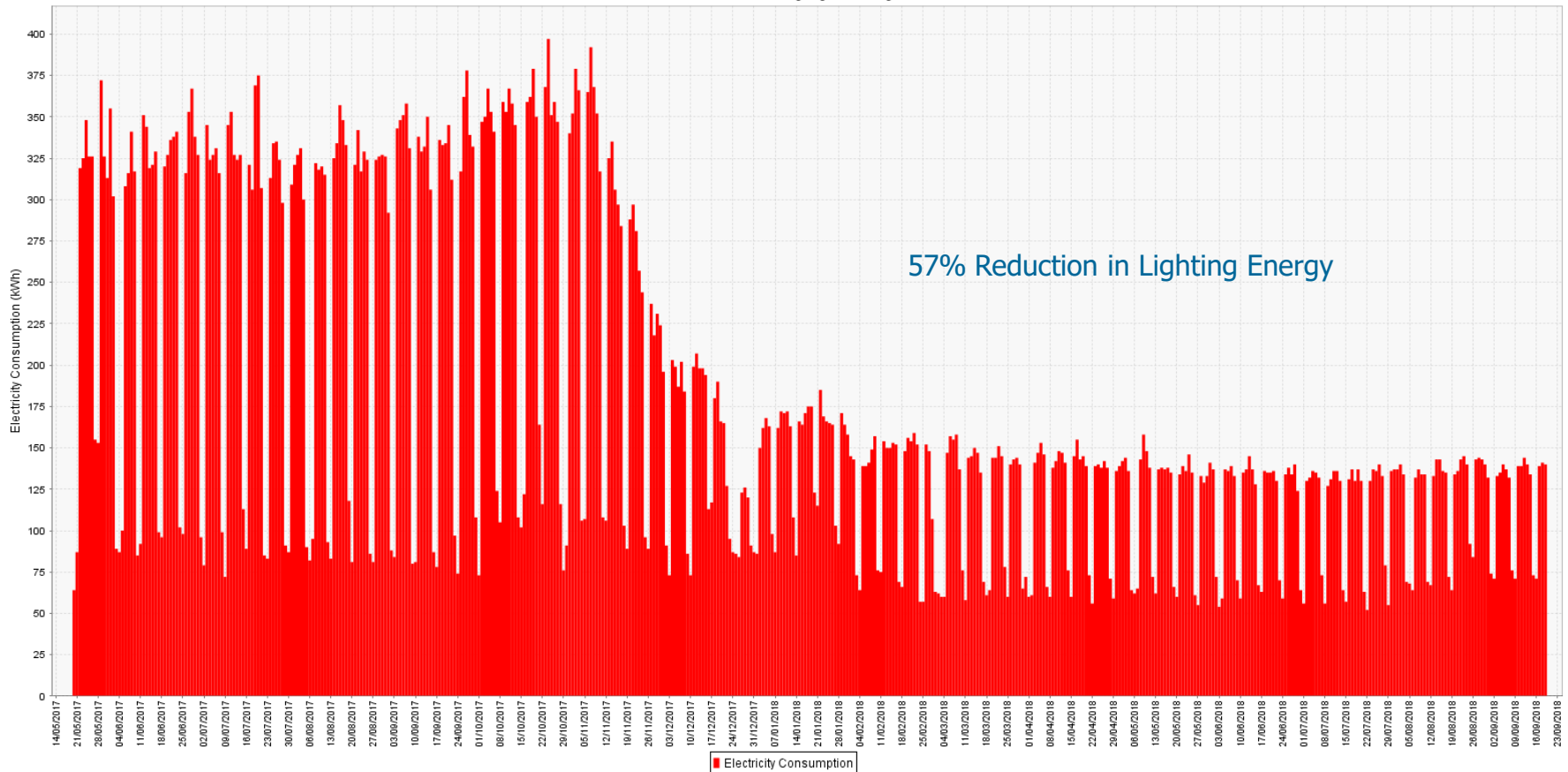


Building No. 2 – Lighting Load:

Total Lighting (Ground, 1 - 3): Daily: Graph

[19/09/2016 00:00 - 20/09/2018 00:00]

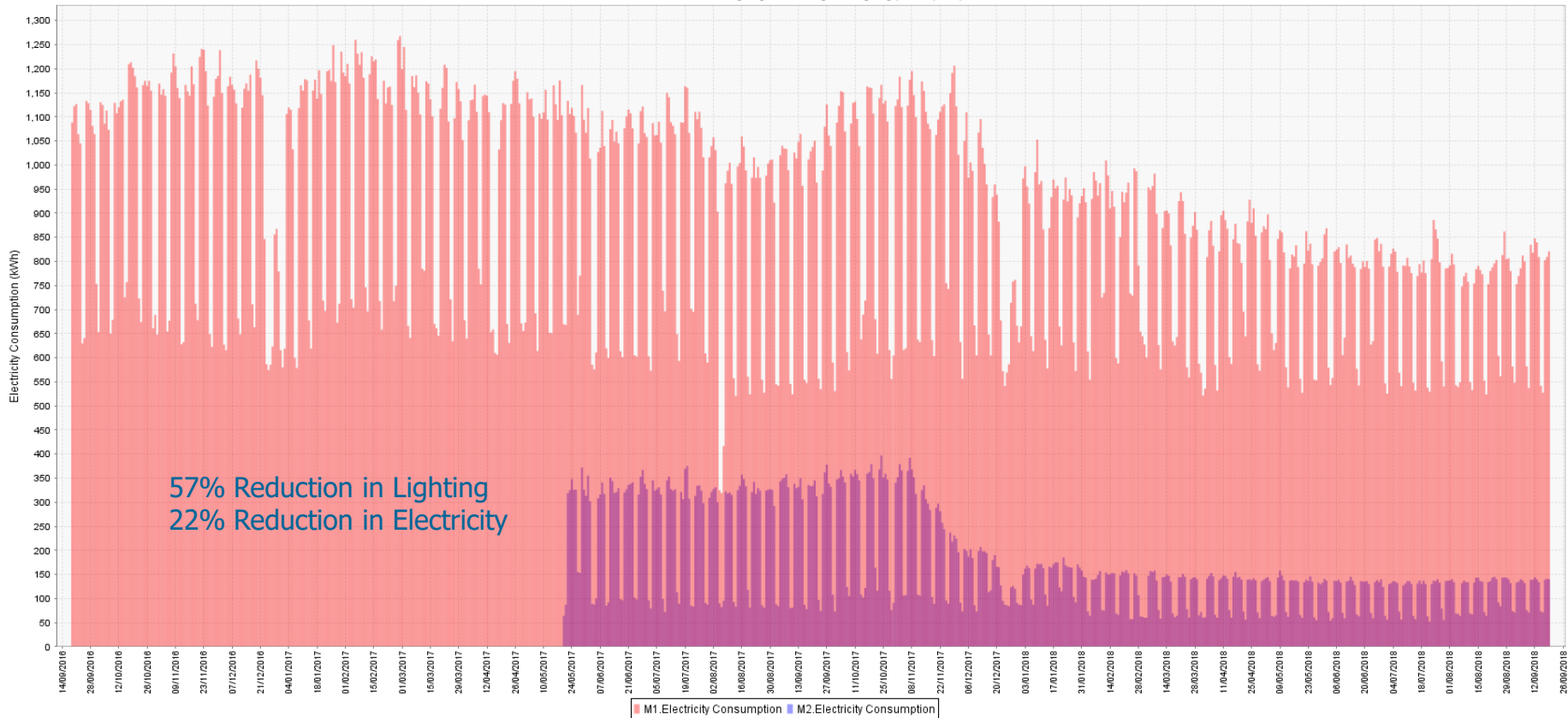
/OPW/Osmond House/Lighting Submetering





Building No. 2 – Total Annual Electrical Consumption

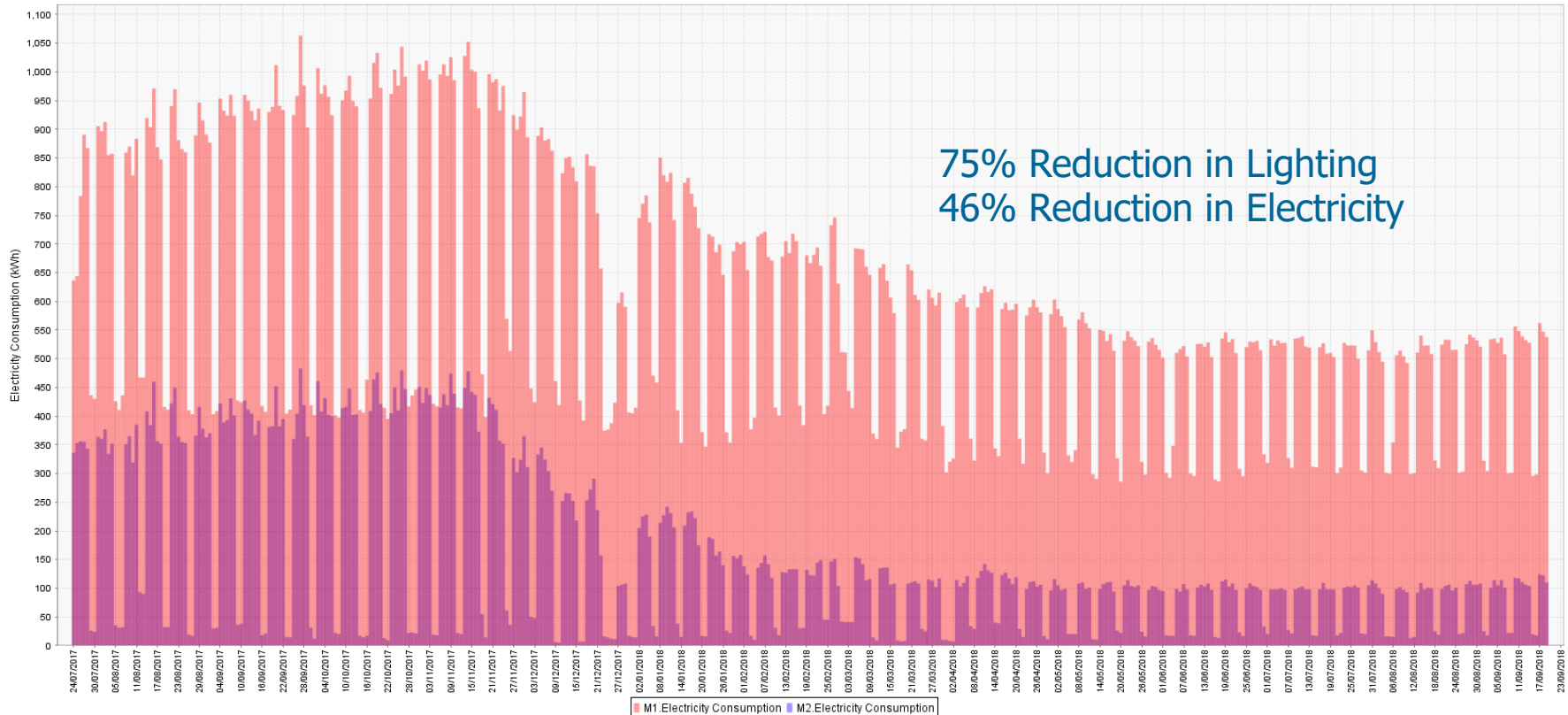
[19/09/2016 00:00 - 20/09/2018 00:00]
M1: /OPW/Osmond House/Electrical Consumption
M2: /OPW/Osmond House/Lighting Submetering/Total Lighting (Ground, 1 - 3)





Building No. 3– Lighting Load:

[24/07/2017 00:00 - 20/09/2018 00:00]
M1: /OPW/Kilkenny Gov Offices/Block1 Sub-metering/B1 Electrical Consumption
M2: /OPW/Kilkenny Gov Offices/Block1 Sub-metering/Block 1 Lighting/B1 Total Lighting Consumption (KWh)





Programme for 2030:

- Buildings suitable for Deep Retrofit Projects or fabric upgrade currently being identified and surveyed
- All PS buildings to be upgraded to BER B by 2030
- Where feasible in buildings with major fabric upgrades - heating systems using renewable energy will be installed to replace fossil fuel boilers.
- Installation of Solar PV



OPW Oifig na
nOibreacha Poiblí
Office of Public Works

Optimising Power @ Work



Thank You

www.opw-energy.ie